



Dick Smith's VZ200 personal colour computer

Jamye & Roger Harrison

Since Clive Sinclair dropped his ZX80 and 81 'toy' computers on an unsuspecting and unprepared market, there's been a rush, no — a stampede, to expand the features of personal computers and contract the price. The VZ200 currently sits right at the forefront.

What does it offer?

THE VZ200 packs an amazing number of features in such a tiny package: 8K bytes of memory (RAM), 16K Microsoft BASIC in ROM, colour graphics — eight colours in medium resolution and four in higher resolution, programmable sound generator with 2½-octave range and nine different note durations, 45-key moving-key keyboard (with auto-repeating keys), both RF output (to TV antenna input) and direct video (for a monitor), inverse video and on-screen cursor-controlled editing.

The VZ200 measures just 290 mm wide by 163 mm deep by 50 mm high overall. The keyboard is on the sloping front apron and all the attachments plug into the rear. It is powered from a 9 Vdc plugpack. Along the rear apron are the following connectors: dc input socket, cassette recorder jack, monitor output, expansion connector, peripheral connector and TV (RF modulator) output on channel 36 UHF.

The video display only uses about three-quarters of the screen (unlike the picture in

the Dick Smith catalogue shows), like many of the colour home computers available. The text format is 32 columns across the screen by 16 lines down. In what they call medium resolution graphics mode you get 64 pixels (blocks) across the screen by 32 down, 128 x 64 (i.e. double) in the 'high resolution' mode.

In the medium resolution mode, you can program a block to be any of eight colours — green, yellow, blue, red, buff, cyan (a blue), magenta or orange. They're what's called the

'foreground' colours. The background (i.e. the rest of the screen area) can be either green or orange in this mode.

In the higher resolution mode, you can program any block (foreground) to be any of only four colours — green, yellow, blue or red — with the background colour green, or with the background buff you can program the blocks to be buff, cyan, magenta or orange.

The programmable sound generator has a range of 31 notes over 2½ octaves from A₂ to D#₅, plus a 'rest'. There are nine programmable note durations of 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1½, 2 and 3.

The text character set comprises 62 of the standard 64-character ASCII table, 5 x 7 dot matrix format. The two you don't get are hardly important in this application. Thirty of the keys on the keyboard have four 'shift' levels — as can be seen from the accompanying pictures. With the exception of the RETURN, SPACE, CTRL and SHIFT keys, the rest have three levels of shift. That is, apart from obtaining the normal character when you press a key, you can get more functions, such as a graphics character, a BASIC command, an operating command or a program statement.

Four keys act as cursor control keys in the CTRL mode, these being the four on the right of the lower rank. The L and ';' keys provide the INSERT and RUBOUT editing functions in the CTRL mode. The colour programming command keys, 1 to 8, are labelled and colour-coded.

The expansion connector will accommodate such things as a memory expansion module. A 16K module is available for just \$79, allowing expansion of the user memory to 24K.

The peripheral connector is for plugging in such things as a printer interface, and one is available for \$49.50, permitting the attachment of a standard Centronics printer, many

models being widely available — and the prices are continually coming down.

The VZ200 is supplied with all cables in generous lengths, a plugpack, a User Manual, a demonstration program on cassette, a BASIC Reference Manual and a booklet of BASIC Applications Programs.

From the user's view

For all the functions packed into the keyboard, the key operation is a big let-down. The keys are rubber-buttoned microswitches and while they do have movement, the feedback via your finger can only be described as uncertain.

We've criticised this type of keyboard in the past and can't help but think that, where a cost compromise is necessary, an elastomeric keyboard (like that on the ZX81) is preferable. The computer gives a 'beep' when you press a key (except for the CTRL, SHIFT and RETURN keys), which helps, but the key action is so light that double-keying is common. The auto-repeat feature, however, is a good idea. The key will repeat the character or command if you hold it down for longer than one second.

The on-screen editing functions are very good — a real boon to the beginner programmer. The usual BASIC editing feature of simply retyping a crook line works, but that can be time-consuming, especially with long lines. The VZ200 allows you to move the cursor around and re-type incorrectly entered characters, commands or statements. With the latter two, the single-key entry feature is a real time-saver. We would rate the editing facilities as one of the VZ200's major features.

The keyboard has an enlarged SPACE key at the right of the lower rank. This is a problem if you're used to a normal typewriter-

style keyboard as you keep cracking your finger on the case below the keyboard! It takes a little getting used to. We also took a little time to learn not to confuse the SHIFT and CTRL keys. There are other problems with the keyboard that relate to its partly non-standard layout, but if you're a beginner in the personal computer stakes it's unlikely to be a worry.

The single-key entering of statements and commands was an idea introduced by Clive Sinclair with his ZX80, forerunner to the ZX81 and Spectrum computers. It's a good idea, taken to its logical limit with the VZ200. Strictly, you need to use more than one key to enter a command, statement or graphics character, but only three at the most; e.g. to get the PRINT command you push CTRL and P together. To get the command or statement under a key, you hold down CTRL and press RETURN, then the key you want.

The direct video output into a Philips 20" colour monitor is good, but plagued by patterning that ripples seemingly diagonally across the display. The display is noticeably inferior when using the RF output into the TV set's antenna. However, it is better than some other popular colour computers around. For the price, it's acceptable.

The VZ200 uses a Z80 microprocessor, probably the most widely used microprocessor in all the personal computers produced to date. The specifications say it runs at 3.58 MHz. However, it's not all that fast, but is probably quite fast enough to manipulate simple graphics effectively.

If you really want to know, a FOR-NEXT loop takes four milliseconds, which in today's computer world is pretty slow. As it really is a beginners' machine, that's no real disadvantage. If you're thinking of ploughing through your maths homework with it, a pocket scientific calculator is faster. ▶

Continued on page 37



SUMMARY OF BASIC COMMANDS

Functions:

1) Arithmetic operators

+, -, *, /, ^

2) Relational operators

>, <, =, >=, <=, <>

3) Arithmetic functions:

SQR — Square root
INT — Integer part
RND — Random number
ABS — Absolute magnitude
SGN — Sign
COS — Cosine
SIN — Sine
EXP — e^x
TAN — Tangent
LOG — Natural logarithm
ATN — Arc tangent

4) String functions:

LEN — Length
STR\$ — String of numeric argument
VAL — Numeric value of string
ASC — ASCII value
CHR\$ — Character
LEFT\$ — Left characters
MID\$ — Middle characters

RIGHT\$ — Right characters
INKEY\$ — Check keyboard

5) Logical operators

AND — Relation and logical expressions have value 1 if true,
OR — 0 if false.
NOT — 0 if false.

6) Graphics and sound functions:

CLS — Clear screen
SET — Plot a point
RESET — Clear a point
POINT — Return the color code
COLOR — Set color
SOUND — Produce tone of different frequency and duration
MODE — Select graphic or text

7) Program statements

DIM — Dimensions
STOP
END
GOTO
GOSUB
RETURN
FOR ... TO ... STEP
NEXT
REM
IF ... THEN ... ELSE
INPUT

PRINT
PRINT TAB
PRINT USING
PRINT @
LET
DATA
READ
RESTORE

8) Commands:

LIST
RUN
NEW
CONT
VERIFY — Check whether program on tape and memory
are equal
CLOAD — Load program on tape
CSAVE — Save program on tape
CRUN — Load program on tape and run
CTRL RESET — To halt program

9) Other Statements

PEEK — Return the value stored at the location specified
POKE — Load a value into a specified location
LPRINT — Print on line printer
LLIST — List on line printer
INP — Return the contents read from ports
OUT — Send values to ports
COPY — Copy the content on screen to printer
USR — Call the user's assembly language subroutine

Documentation

The BASIC Reference Manual and the two booklets supplied with the VZ200 are generally well produced, clear and understandable — which is just what the raw beginner wants.

The BASIC Reference Manual is spiral bound, which facilitates laying it open so the pages sit flat. However, the spiral binding is just slightly too small for the number of pages and it's a bit of a bind trying to turn them.

This manual covers all the functions and operations of the VZ200 in a fundamental way, with some programming examples. You are encouraged to learn by trying things for yourself. We found a number of small errors, but nothing disastrous.

For example, the method of using the INSERT command when editing does not work the way it's described in the book. Say you typed PRIT instead of PRINT. The book says you do an INSERT by moving the cursor up to the character *before* the place you want to insert a character (that is, 'I' here), type CTRL INSERT, then type the required character (that is, 'N' here). However, that gives you PRNIT!

What you really have to do is cursor up to the character *after* the place where you need to insert a character, then do the insert routine.

The reference manual lists all the available text characters and BASIC statements, operators and commands, with some brief explanations. An error message list is given, but incredibly, no explanation of what they all mean or what to do when you get one! Grrr.

For all its good points, the manual contains no *detailed* index, which would be very useful for a beginner. The contents list is at least comprehensive, so that's a plus in its favour.

What happens when you've worked your way through the reference manual? Well, you won't be a hot-shot programmer, but you will have gained an understanding of programming and be able to tackle some programs of your own invention, plus modifications to published software.

As Microsoft BASIC is used — the erstwhile 'industry standard' — there are huge amounts of published programs and many, many books on the subject that will keep you occupied for ages.

A booklet of applications programs is included with several dozen short programs that are not only interesting and amusing, but instructive and perhaps useful to boot. Many would be good 'starting points' for developing programs of your own devising or useful as subroutines within your own programs.

Absolutely no technical details, not even a memory map, are given, but we guess that such things might appear in some 'support' publications.

The BASIC

The 16K Microsoft BASIC included can only be described as excellent — outshining the mechanical and electronic constraints of the VZ200. But, we have to keep reminding ourselves that this is really a low cost beginners' machine. The range of commands, etc, available, and the flexibility of the language, stand out. Learning to use the facilities is a breeze. The buzzword is 'user friendly'!

All the BASIC commands, operators and statements are shown in the accompanying panel. Those of you who know will see that it's all pretty standard fare. However, it's good to see the inclusion of such things as IF ... THEN ... ELSE statements and the COPY statement (otherwise known as a 'screen dump'). Seeing that USR is included for the benefit of using machine code in BASIC programs, we can only hope that some suitable books or manuals on the subject, specifically for the VZ200, will appear at some later date.

Programming using graphics or sound is relatively simple. The graphics commands are simple, largely because of the 'chunky' graphics employed. You'll find no DRAW, PAINT, LINE or CIRCLE commands here, but what you do get is effective for the sort of graphics included in the machine. It's best to crawl before you walk, and it's a beginners' machine, remember. Similar sentiments apply to the sound programming.

Cassette comments

A pre-recorded cassette with cute demonstration software comes with the VZ200. For one thing, it shows that the cassette interface is quite good, as reliable loading was no problem.

As the VZ200 is not a games/computer machine, the pre-recorded software base is only going to be available on cassette, as there's no ROM socket. At present, there's no pre-recorded software available, but, from past experience, that's probably a situation that will rectify itself.

There are lots of 'freelance' software producers in the market supplying software for existing machines who will doubtless get behind the VZ200.

Conclusion

The VZ200 is very reminiscent of the Sinclair ZX81/Spectrum or National JR100 (which is sort of rare here, as yet). It has a very great deal to offer in price, functions and features. The major disappointment is the keyboard, but all low cost home computers compromise here and it's a matter of preference whether you favour one type of cheap keyboard over another.

The big question is, would you do any better at \$299. You'd almost certainly get a better keyboard, but we haven't yet seen anything in that price range to compete with the features and memory capacity of the VZ200.

Judging from the phenomenal success and popularity of other 'bottom end of the market' computers, such as the ZX81, Spectrum and VIC-20, there are huge numbers of people who want a low cost computer just to 'get started', or get their children started, in computing.

Price is all-important to people who don't want to pay a great deal of money to learn what the subject's all about before 'getting in deeper'. Compromises are acceptable therefore, and our criticisms should not be taken too much to heart. For its price, the VZ200 has a great deal to offer, and from such small beginnings one can go on to 'conquer the world', or at least a comfortable niche.